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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/681,649
Filing Date: October 08, 2003
Appellant(s): NEHLS ET AL.

Eric D. Misfeldt
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed June 10, 2009 appealing from the Office action mailed November 13, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 5439694	MORRIS, Jr.	8-1995
US 3620766	WALLACE	11-1971
US 3052559	PEEBLES	9-1962
US 4782643	STARK	11-1988
US 3005716	MORELAND	10-1961
US 5711981	WILSON	1-1998
US 2919639	CRONIN	1-1960
US 2682827	GRESSLY	7-1954
US 2909985	ABRAMS	10-1959

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

- **Claims 1,8-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris, Jr. (US 5439694) in view of Wallace (US 3620766), Peebles (US 3052559) and Stark (US 4782643).**

Regarding claim 1, it is noted that the claims does not recite any sterilization step but rather only recite the limitation to "treat" the surface of the food product.

In any case, Morris Jr. discloses treating the outer surface of the food product by placing a food product having an outer surface on an advancement mechanism, providing a steam sleeve for generating a flow of steam to treat the outer surface of the food product and passing the food product in a feed direction through the steam sleeve using the advancement mechanism (see figure 1). The food product enters the steam sleeve through rubber doors (figure 1, item 34) and steam contacts all the exposed surfaces of the food product (column 3, line 21). The steam is continuous unless it results in over heating of the food. In order to prevent this, Morris Jr. discloses using sensors and an electronic solenoid valve to cut off steam whenever the conveyor line stops (column 3, lines 19-27). Morris, Jr. also teaches direct contact of the food product with the steam. Regarding the limitation of the steam sleeve having an interior wall, the sleeve of Morris Jr. inherently includes an interior wall and also has an entrance and exit that define the length of the steam sleeve.

Claim 1 differs from Morris, Jr. in limitations of the particular length of the food product and wherein the food product simultaneously extends beyond both

the entrance and exit during at least part of the step of passing the food product through the steam sleeve.

Wallace teaches that it has been conventional in the art to process meat wherein a continuous length of meat passes through multiple treatments, such that the length of the food product simultaneously would block both the entrance and exit of a treatment section of the process (See figure 1 of Wallace). In addition, Peebles has been relied on as further evidence of the continuous movement of a food product through a sleeve that applies steam to the food product (figure 1, section 19). Stark similarly teaches in figure 1, item 12 and figure 5, item 18) treatment of a continuous food product wherein the product blocks both the entrance and exit of the treatment zone. Since the art taken as a whole teaches that it was conventional to treat the outer surface of a conventional food product such that the food product has a length that blocks both the entrance and exit of the treatment zone, to therefore block the entrance and exit of the steam chamber would have been an obvious matter of choice and/or design that would have been a function of the length of the particular conventional food product that was desired to be sterilized.

Regarding claim 8, Morris Jr. discloses a seal, using rubber doors (Figure 1, Item 34) to form a seal between the outer surface of the food product and at least one of the entrance and exit of the steam sleeve using a generally flexible wiper element. Since the rubber doors are flexible, they seal the chamber and would also act as a wiper element against the surface of the food product.

Regarding claim 9, Morris Jr. discloses continuous advancement of the food product since the food product is fed into the steam sleeve. The steam generation is only stopped whenever the conveyor is stopped, for the purpose of preventing overheating of the food product (Column 3, lines 19-27).

Regarding claim 11, it is noted that the advancement mechanism taught by Morris Jr. would inherently have been advanced at a predetermined rate. Furthermore, although Morris Jr. does not specify in depth the sterilization parameters, the particular temperature for the treatment would have been dependent on the type of food to be sterilized and the requisite temperature that results in efficient sterilization. Furthermore, the particular depth of the food product would also have been dependent on the particular type of processing after sterilization. In view of this knowledge by the ordinarily skilled artisan, the particular fluid properties to achieve a desired surface temperature and the particular depth of the food would have been an obvious matter of choice and/or design routinely determinable by experimentation for the purpose of achieving the desired sterilization and properties of the food product.

- **Claims 2, 28-29 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 1, 8-9 and 11, above, and in further view of Moreland (US 3005716).**

Regarding claims 2 and 28, Morris Jr. teaches injecting steam into the steam sleeve from an inlet (36) and removing condensate from an outlet (32).

Claims 2 and 28 differ from the previous combination in specifically reciting wherein the circulating of the flow of steam in the steam sleeve occurs within an inwardly open channel formed in the interior wall of the sleeve, with the channel having an inlet for introduction of the steam into the sleeve and an outlet for removal of the steam and condensate from the sleeve.

Moreland has been relied on to teach that the structure of an inwardly open channel (figure 3, item 43) through which a treatment fluid passes (column 2, lines 53-59) for the purpose of treating the surface of the article that comes into contact with the treatment fluid, has been a conventional structure for fluid treatment. Clearly, Figure 3 of Moreland also teaches an inlet and outlet (44 and 45). Moreland also teaches on column 3, lines 37-43 that the heating of the sausage material to sterilize the sausage emulsion is assisted by the passage of the hated liquid through the helical groove. Therefore, Moreland teaches that open channel structures having an inlet and outlet have been conventional structures for the purpose of passing a treatment fluid there-through that aids in sterilizing and heating the surface of a food product within the treatment sleeve. To therefore modify the structure of the combination and employ the open channel structure as taught by Moreland would therefore have been obvious to one having ordinary skill in the art, for the purpose of ensuring that the treatment medium taught by the combination would come into complete contact with the food product that is passed there-through. It is noted that Moreland is analogous art because Moreland is concerned with treating the surface of an

article with a treatment medium while the article is moving through a sleeve, which is applicants' problem as well.

It is noted that claim 29 does not recite simultaneous blocking of both the entrance and exit of the steam sleeve. Regarding claim 29, the steam is continuous as discussed above with respect to Morris, Jr., and as shown in the figure, the food product at least partially blocks the entrance and the exit during the step of generating the flow of steam in the steam sleeve.

Claim 32 is rejected for the reasons given above in claim 1, with respect to the references to Wallace, Peebles and Stark and the simultaneous blocking of both the entrance and exit.

- **Claims 3-7,10, 12-16, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 2, 28-29 and 32, above and in further view of Wilson (US 5711981), Cronin (US 2919639), Gressly (US 2682827) and Abrams (US 2909985).**

Regarding claims 3, 30 and 31, the combination as discussed above teaches employing channels that are generally circular and aligned perpendicular relative to a longitudinal axis of the food product and circulating the flow of steam in the steam sleeve within a channel. It is further noted that Moreland already teaches the helical channels into which are passed a treatment fluid. The treatment fluid would inherently have been passed through the channels of Moreland in a circular flow.

However, the claims differ in reciting introducing the steam into the entrance of the channel with a tangential velocity effective to generate a circular flow directing at least some of the steam condensation away from the outer surface of the food product.

Firstly, it is noted that Morris, Jr. teaches removing the condensate through an outlet (32). Wilson et al. strive to ensure that moisture does not remain on the food product, since it is taught that excess moisture would absorb the heat energy that performs the pasteurization (column 7, lines 46-50, for instance). As can be seen from figure 9a, Wilson et al. further teach encircling of the steam around the food product for the purpose of uniform steam treatment. This provides motivation for the particular pathway of the steam around the food product. In any case, the art has thus recognized that residence of moisture on the food product results in the transfer of heat away from the food and thus lowering the pasteurization temperature while also uniformly treating every surface of the food product. Cronin has similarly been relied on to teach rotating the food product, instead of the treatment medium, for the similar purpose of preventing residence of the treatment solution on the food (Column 4, lines 46-52). Gressly discloses an apparatus for sterilizing foodstuffs and beverages wherein high pressure steam is injected into the sterilizing chamber through multiple inlets. The multiple inlets are angled so as to form a helical passage of steam within said chamber (Column 3, Lines 22-52). By allowing the high pressure steam to form several helical passages, the turbulence within the

sterilizing chamber is increased, which thus allows for uniform heating of all particles (Column 4, Lines 24-29). Abrams similarly teaches that a tangential injection of steam for rapid and uniform sterilization (column 4, lines 8-34).

In view of the art taken as whole, it has been conventional in the art to introduce steam with a tangential velocity that further takes a helical path for the purpose of uniformly and rapidly sterilizing all surfaces of the food product. Moreland already teaches helical channels for introduction of a treatment fluid. Wilson et al., Cronin, Gressly and Abrams have been relied on to teach injecting steam in a helical pattern for encircling the food product and with a tangential velocity for the purpose of uniform and rapid sterilization. In addition, one having ordinary skill in the art would have recognized that high pressure steam that creates turbulence would have aided in preventing contact of steam condensate with the food product: the helical path of the steam creates centrifugal forces that would drive heavier contents outwardly (radially) and the turbulence would have aided in removing any condensate that did come into contact with the foodstuff. Based on these teachings to modify the combination and provide a helical channel for heat treating a food would have been obvious to one having ordinary skill in the art at the time of the invention, for the purpose of imparting uniform surface treatment of the food product.

Regarding claims 4, 30 and 31, the art taken as a whole teaches a helical channels, as evidenced by Moreland, which thus would have circulated the flow of steam multiple times around the food product.

Regarding instant claim 5, Morris, Jr teaches a flow of steam having a general direction opposite to that of the feed direction. In this case, the steam is injected from above, while the food is processed horizontally. In view of the breadth of the term "general direction opposite" Morris Jr., teaches a general direction opposite to that of the feed direction, but is silent in teaching a helical channel. In light of the teachings of Moreland, the particular path of the treating medium, such as a helical path would not have provided a patentable feature over the prior art.

Regarding claim 6 which recites including more than one set of helical channels, each having their own inlet and outlet, it is noted that once it was recognized in the art to employ helical channels, as taught by Moreland, to provide more than one set of helical channels, each with their own inlet and outlet would have been an obvious duplication of structures already employed for exposing the surface of a product to a treatment medium.

Regarding instant claim 7 which recites the flow of the steam in a general direction opposite to that of the feed direction and the positioning of the helical channels so that the flow of steam is in the same general direction as that of the feed direction (Column 3, Lines 46-52), for the purpose of uniformly heating the food product. Wilson et al. also teach uniform and complete sterilization of the food product therein by using a positive pressure chamber (Column 6, Lines 54-57). As shown by figure 9a of Wilson et al., the direction of flow of the steam is in "a direction general direction opposite to that of the feed direction," and is

essentially encircling the food product. Given these teachings, it would have been obvious to one having ordinary skill in the art at the time the invention was made to flow the steam in both the same and opposite direction to that of the feed direction for the purpose of ensuring uniform heating.

Regarding instant claim 10, Gressly teaches multiple inlets. Therefore given the teachings of Gressly, as discussed above, each inlet would have created a helical path for the steam. Also, as discussed above, Wilson et al. disclose multiple inlets and outlets for the channels that flow steam. Therefore it would have been obvious to one having ordinary skill in the art to modify Wilson et al. to use multiple inlets so as to create multiple helical paths, as taught by Gressly for the purpose of ensuring uniform heating of the foodstuff. Additionally, one having ordinary skill in the art would have recognized that high pressure steam that creates turbulence would have aided in preventing contact of steam condensate with the food product: the helical path of the steam creates centrifugal forces that would drive heavier contents outwardly (radially) and the turbulence would have aided in removing any condensate that did come into contact with the foodstuff.

Regarding claim 12, Morris Jr is silent in teaching wherein the step of passing the food product through a steam sleeve occurs immediately prior to the slicing station. However; Wilson et al. disclose wherein the step of cutting can occur immediately after the entire meat pasteurization process has been completed. Since the process of sterilizing the meat product occurs at such high

temperatures, Wilson et al. teach wherein coolant is sprayed onto the surface of the meat so as to prevent the meat from being cooked at its surface (Column 10, Lines 20-22). Nevertheless, immediately after the prevention of surface cooking, said meat product could be further processed by cutting, or any other process such as packaging or freezing. Given these teachings, it would have been obvious to one having ordinary skill in the art to modify the combination and cut, package, freeze, or perform any other processing step after the pasteurization process had been completed. Therefore, providing a slicing station would not have provided a patentable feature over the prior art.

Regarding claims 13 and 14, it is noted that Morris Jr. teaches flexible rubber doors that close the entrance and exit of the steam sleeve. The claim differs from the combination in specifically reciting wherein the sealing gates are selectively shiftable between a sealing position and an unsealing position allowing access to the exit opening. It is noted that Wilson et al. teach selectively openable and closable gates, for applicants' purpose of sealing the steam sleeve prior to entrance and exit of the food product (Column 9, Lines 25-30 and Lines 59-61; Column 10, Lines 12-17). Wilson et al. use these sealing gates for the purpose of maintaining a particular steam environment within the sleeve. To therefore modify the combination and employ sealing gates, as taught by Wilson et al., would have been obvious to one having ordinary skill in the art, for the purpose of maintaining a particular steam environment for the purpose of treating the food product contained within the sleeve.

Regarding claim 15, Morris Jr. is silent in retracting the advancement mechanism from a trailing face of the food product while the trailing face of the food product is positioned within the steam sleeve for a period of time sufficient to provide steam treatment to the training face of the food product prior to advancement of the food product through the exit opening of the steam sleeve.

It is noted however, that the claim is not specific as to what can be considered the advancement mechanism and what is considered a trailing face of the food product. The claim does not provide a frame of reference with respect to the sleeve, for instance, for what is considered that trailing face. In any case, Moreland, for instance, teaches a pushing device (figures 3 and 4, item 22) which both extends and retracts when a particular amount of the food product is placed into the treatment zone. Additionally, in light of the broad interpretation of the term “trailing face," Wilson et al. teach retracting the advancement mechanism away from a trailing face of the food product while the trailing face of the food product is positioned within the steam sleeve for a predetermined period of time. Since the advancement mechanism of Wilson et al. can be continuous or batch (or semi-batch) the advancement mechanism is always moving away from a trailing face of the food. Thus, the advancement mechanism is retracted from the trailing face of the food. The exit to the steam chamber is only opened after complete steaming (Column 9, Lines 25-30), therefore the trailing face of the food product is also sufficiently steamed.

Regarding claim 16, Wilson et al. disclose a cooling operation immediately prior to advancing the food product into a steam sleeve (Column 8, Lines 23-37). By removing the water using air, it is interpreted that Wilson et al. disclose cooling the food product. In evaporating the water or allowing the water to drip from the food product, it is known that heat energy is withdrawn from the surface of the food product, thus cooling said product. To therefore modify the combination and cool the product after steam treatment would have been obvious for its art recognized and applicants' intended function.

- **Claims 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Wilson et al. (US 5711981) in view of Moreland (US 3005716).**

Regarding claim 28, Wilson et al. teaches a method of treating an outer surface of a food product comprising, placing a food product having an outer surface on an advancement mechanism (Figure 2, Item 25); providing a steam sleeve (Figure 3, Item 14) for generating a flow of steam having selected properties to treat the outer surface of the food product, the steam sleeve having an entrance (Figure 1, Item 30; Column 9, Lines 25-30) and an exit (Figure 1, Item 38; Column 9, Lines 25-30); passing the food product in a feed direction (Figure 1, See arrows near Item M) through the steam sleeve using the advancement mechanism (Column 5, Lines 53-64); and generating the flow of steam in the steam sleeve while the food product is passing therethrough, the

flow of steam contacting the outer surface of the food product for treatment of the outer surface of the food product (Column 6, Line 42 to Column 7, Line 27). Regarding the limitation of the steam sleeve having an interior wall, it is noted that the sleeve of Wilson et al., has an interior wall. The steam sleeve length is defined by the distance between the entrance (30) and exit (38) doors. Wilson et al. uses an advancement mechanism (figure 5, item 125) and generates a flow of steam in the steam sleeve and circulates the flow of steam in the steam sleeve within a channel (Figure 9A).

The claim differs from Wilson et al. in the particular structure of the channel. Specifically, the claim includes the limitations of the channel formed in the interior wall of the sleeve, the channel having an inlet for introduction of the steam into the sleeve and an outlet for removal of the steam and condensate from the sleeve, the channel inwardly open to an interior of the sleeve while the food product is passing there through.

Moreland has been relied on to teach that the structure of an inwardly open channel (figure 3, item 43) through which a treatment fluid passes (column 2, lines 53-59) for the purpose of treating the surface of an article with the treatment fluid. Clearly, Figure 3 of Moreland also teaches an inlet and outlet (44 and 45). Moreland also teaches on column 3, lines 37-43 that the heating of the sausage material to sterilize the sausage emulsion is assisted by the passage of the heated liquid through the helical groove. Therefore, Moreland teaches that open channel structures having an inlet and outlet have been conventional

structures for the purpose of passing a treatment fluid there-through that aids in sterilizing and heating the surface of a food product within the treatment sleeve. In view of Figure 9a of Wilson et al. which teaches encircling the food product with steam, to modify the structure of Wilson et al. and employ the open channel structure as taught by Moreland which would also have resulted in encircling of the product with a treatment fluid, would therefore have been obvious to one having ordinary skill in the art, for the purpose of ensuring that the treatment medium taught by Wilson et al. would come into complete contact with the food product passed there-through.

Regarding claim 29, the limitation "at least partially blocking" is broad. By being inside the steam sleeve during sterilization, for instance, the food product would at least partially block the entrance to the steam sleeve. This would be similar to someone standing inside of a door, but still blocking the door so as to prevent someone else from walking in. Further regarding claims 28 and 29, it is noted that Wilson et al. also disclose that the chamber at least partially receives the food (Column 4, lines 2-3). This discloses that the meat is not necessarily enclosed within the chamber and therefore the meat would partially block the entrance and exit during the process of conveying the meat through the steam chamber.

Regarding claim 30, it is noted that Wilson et al., teach circulating the steam (column 4, lines 50-51). Wilson et al. also show multiple ports for entrance of steam, as shown in figure 5, item 136 as the downwardly extending

channels. Since Wilson et al. is circulating the steam and has multiple channels, Wilson et al., would circulate the steam around the perimeter of the product multiple times. It is further noted that since Wilson et al. is circulating the steam, that the application of the steam between the inlet and outlet of the channel would also inherently occur multiple times, since this is the basis for circulating steam or any gas. By circulating, the steam would continuously flow around the perimeter of the product between the inlet and outlet.

Regarding claim 31, the combination teaches circulating the flow of steam in a plurality of channels inwardly open to an interior of the sleeve.

(10) Response to Argument

- On page 11 of the Appeal Brief, appellant urges the advantages of the claimed method (claims 1 and 28) as follows:

"The advantages provided by [Appellant's] claimed methods (claims 1 and 28) include, for example, (1) applying steam to the product to achieve an extremely rapid thermal surface pasteurization and when the steam is provided at high velocities, increased rate of heat transfer can occur, (2) focusing the heat treatment on the surface may minimize adverse impacts on texture, flavor, or other properties of the food product, and (3) minimizing the amount of post-treatment cooling required to return the product to its original thermal state. Further, the advantages of having inwardly open channels formed on the interior of the sleeve (claims 2, 3, and 28) include, for example, that the flow velocity of the steam generates centrifugal forces that tend to keep steam condensate moving to the outer part of the channel and away from the surface of the food product. If the condensate were not moved away from the surface of the food product, it could act as an insulating barrier on the product surface, slowing heat

transfer. Also, the removal of excess steam and/or condensate can desirably reduce moisture levels which can contribute to microbial activity."

Regarding these urged advantages, it is noted that appellant's claims 1 and 28 are not commensurate with this apparent advantages to appellant's claimed process. For instance, nowhere does claim 1 or claim 28 recite applying steam to achieve extremely rapid thermal surface pasteurization or the advantage of minimizing adverse impacts on texture, flavor or other properties, nor do claims 1 or 28 recite minimizing the amount of post-treatment cooling required to return to its original thermal state. Claim 1 only recites "treating" the outer surface of a food with steam, and claim 28 only similarly recites, contacting the outer surface of the food product "for treatment" with a flow of steam within a channel that is inwardly open to the interior of the sleeve.

Regarding the urged advantage of moving condensate away from the surface of the food product, it is further noted claims 1 and 28 also do not recite these limitations. In any case, it is noted that the problem of removing the insulating condensate during steam sterilization has already been a recognized problem in the art, as evidenced by Wilson et al. who strive to ensure that moisture does not remain on the food product, since it is taught that excess moisture would absorb the heat energy that performs the pasteurization (column 7, lines 46-50, for instance). As can be seen from figure 9a, Wilson et al. further teach encircling of the steam around the food product for the purpose of uniform steam treatment. Wilson recognized the importance of preventing condensate

from residing on the food product during sterilization since it takes heat energy away from the food and thus lowers the sterilization temperature (column 7, lines 46-50, for instance). Figure 9A of Wilson also teaches the concept of circulating the steam into (figure 9A, Item 136 and Item S entering the chamber) and out of the chamber (Figure 9A, item S near item 158 exiting the chamber) and providing an exit for the condensate (Figure 9A, Item 119). From figure 9A, it can be seen that Wilson also is teaching applying steam to sterilize the food product, wherein the steam hits the surface of the food product along the length of the product, with the condensate exiting at item 119 and the steam exiting through item 138. This provides motivation for the particular pathway of the steam around the food product. The only difference between Wilson and the claim is the particular structure of the channels that have been employed to direct the steam into direct contact with the food.

In any case, the art has thus recognized that residence of moisture on the food product results in the transfer of heat away from the food and thus lowering the pasteurization temperature while also uniformly treating every surface of the food product. For instance, Cronin teaches rotating the food product for the similar purpose of preventing residence of the treatment solution on the food (Column 4, lines 46-52). Therefore, as discussed in the rejections above, Wilson et al., Cronin, Gressly and Abrams have been relied on to teach injecting steam in a helical pattern for encircling the food product and with a tangential velocity for the purpose of uniform and rapid sterilization. In addition, one having ordinary

skill in the art would have recognized that high pressure steam that creates turbulence would have aided in preventing contact of steam condensate with the food product: the helical path of the steam creates centrifugal forces that would drive heavier contents outwardly (radially) and the turbulence would have aided in removing any condensate that did come into contact with the foodstuff.

- On pages 14-21 of the Appeal Brief, Appellant makes several points individually with respect to each of the references relied on. With regard to Morris, Jr. Appellant urges that Morris discloses that multiple carcasses are passed throught eh chamber for preheating and sterilization. With regard to Wallace, Appellant urges that the continuous string of wieners are steam treated while being encased in a cellulose casing that is removed after steam treatment and therefore the outer surface of the wieners are not directly contacted with the steam. With regard to Peebles, Appellant makes a similar urging that the food product is not contacted by steam in the sterilization section since the food product is contained in a flexible plastic container. With regard to Stark, Appellant makes a similar argument that Starck employs a container within which the liquid food product has been placed and only in this arrangement of the food product within the container, is the food heat treated. Thus Appellant urges that Stark also does not directly contact the food product with steam. With regard to Moreland, Appellant urges that Moreland teaches employing a tube into which a sausage emulsion is fed, and the external surface of the tube is heated but the sausage emulsion is not directly heated by the heating liquid.

Regarding these urging against each of the references individually, it is noted that, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, it is noted that Morris Jr. already teaches the concept of placing a food product on an advancement mechanism

and treating the food product with steam and even teaches continuous steam treatment (column 3, lines 28-32). Claim 1 only differs from Morris, Jr. in the length of the particular type of food to be steam treated. Nevertheless, Wallace, Peebles and Stark teach the concept of employing continuous food products wherein the food products simultaneously extends out from both the entrance and exit of the steam sterilization section. Although the references to Wallace, Peebles and Stark might disclose that the food product is within a container and so the heat treatment occurs with contact of the heat treating medium contacting the container and through heat exchange treating the food product, it is noted that Morris Jr. already teaches direct contact of a food with steam for steam sterilization. Wallace, Peebles and Stark have only been relied on to teach that the art recognized heat treating for sterilization purposes, a continuous food product such that the food product would extend out from the entrance and exit of the heat treatment chamber. Therefore, the particular conventional length of the food product that the ordinarily skilled artisan would choose to sterilize would have been an obvious matter of choice and/or design. The food product thus extending beyond the entrance and exit of the steam chamber would thus have been an obvious function of the particular conventional length of the food product. Appellant is not the first to employ heat and steam treatment to a food product that extends beyond the entrance and exit of a steam sterilization sleeve.

Furthermore, it is noted that Wallace for instance, employs a cellulose casing around the meat product for the purpose of containing the particular meat

product that is heat treated, so that it maintains its moisture and to achieve the desired cooking (column 3, lines 48-59). It is also noted that the particular skin formed around the meat is a product of the curing process, which coagulates the protein in the wieners at the surface therefore to form a peelable skin (column 3, lines 43-48). Nevertheless, this provides further evidence that if one was treating a food product that was already sufficiently formed and solid such that a casing or container was not required and the art recognized advantage of a skin formed around the food was not required, then to sterilize a particular length that would extend beyond the entrance and exit of the sterilization chamber would have been an obvious matter of choice and/or design. Peebles and Stark are similar in that the particular food product that is heat treated is in a flowable form which thus requires some containment. With respect to Moreland, it is noted that Moreland is also employing a tube (19) for the purpose of achieving the desired shape to the sausage emulsion placed therein (column 1, lines 66-72) for the purpose of containing and thus forming, heating and sterilizing frankfurters (column 3, lines 42-73). That is, the tube prevents the meat emulsion from flowing into the inwardly directed channels through which the heating liquid passes. Therefore, if the food product to be heated was already in a particular rigid shape, as evidenced by Morris, Jr. and Wilson, for instance, then it would have been obvious to have directly treated the surface of the food product with sterilization treatment.

Regarding Cronin, Gressly and Abrams, it is noted that these references have only been relied on to further teach the concept of reducing the particular amount of contact time of the treatment solution on the food (Cronin column 4, lines 46-52); employing multiple steam inlet jets that are angled so as to form a helical passage of steam for increasing turbulence within the sterilizing chamber thus allowing for uniform heating of the contents to be sterilized (Gressly column 3, lines 22-52); and achieving rapid and uniform sterilization of a food product by employing steam that injects steam tangentially to the food product (Adams, column 4, lines 8-34). Regardless of the particular products to which the heat treatment has been applied, the concept of employing helical and tangential steam application for the purpose of uniform steam sterilization as well as minimizing residence time to prevent condensation, has thus been recognized in the art and to thus employ these conventional concepts to a particular type of food would therefore have been within the skill of one having ordinary skill in the art.

- On page 22-24 of the Appeal Brief, Appellants urge that

"With respect to claim 1, the applied references fail to disclose the method of passing a food product through a steam sleeve, the food product having a length greater than the length of the steam sleeve and contacting the outer surface of the food product with a flow of steam for treatment of the food product (page 22 of the Appeal Brief). As none of the applied references, alone or in combination, disclose passing a food product through a steam sleeve, the food product having a length greater than the length of the steam sleeve, and contacting the outer surface of the food product with a flow of steam for treatment

of the food product, there is clear error in the rejection (page 24 of the Appeal Brief)."

These arguments have been considered but are not persuasive. It is noted that Morris Jr. already teaches employing steam to sterilize a food product with direct contact between the food product and the steam for treating the outer surface of the food product. The claim only differs in the particular length of the food product. Nevertheless, the secondary references to Wallace, Peebles and Stark all teach a continuous length of food product wherein the food product extends beyond the entrance and exit of the sterilization section in the process. Although these references might teach a container type device between the food product and the heat/steam treatment, such a container would obviously have been desired if the product was of a fluid type. Morris, Jr., for instance already teaches a non-fluid type product which thus does not require a container to hold the food to a particular shape, and thus can directly contact the food with the steam. Therefore, as discussed above, once the art recognized that it was conventional to directly apply steam to the surface of a food product for the purpose of steam sterilization and once the art recognized that it was conventional to heat treat continuous portions of food that extend beyond the entrance and exit of the steam/heat treatment section, the particular conventional length of the food product to be treated would have been an obvious matter of choice and/or design. Also, it would have been obvious to one having ordinary skill in the art that to have the food product extend beyond the entrance and exit

of the steam chamber would also have been an obvious function of the particular conventional food one chose to sterilize. If the food product was longer than the sterilizing chamber as evidenced by the secondary references, then obviously the food product would have extended beyond the entrance and exit of the steam chamber.

- Further on page 24 of the Appeal Brief, Appellant urges that

> "Morris, Jr. teaches that the individual carcasses are to be spaced at intervals along a conveyor line (Col. 3, lines 8-10) following slaughter and evisceration and that the carcasses are to remain in the steam chamber for a predetermined length of time before being moved out of the chamber (claims 1 and 3 of Morris Jr.). Therefore, it would go against the disclose of Morris, Jr. to have a carcass simultaneously extend beyond both the entrance and exit of the steam chamber as the dwelling time in the chamber would be required to ensure that the steam would contact all of the surfaces. This is apparent from the length of the apparatus of Morris, Jr. which is many times longer than the carcass."

This argument has been considered but is not persuasive. It is noted that in view of the art taken as a whole, to treat a food product such that it extends past the entrance and the exit of the steam chamber would have been an obvious function of the particular food product one chose to sterilize. That is, the art has already recognized food products that are continuous and extend beyond the length of the heat treatment section. Therefore to employ a particular conventional type of food and a particular conventional length of food such that the food extends beyond the entrance and exit of the steam chamber of Morris,

Jr. would have been an obvious matter of choice and/or design to one having ordinary skill in the art. Regarding Appellant's urging that Morris, Jr. requires a dwell time in the chamber to ensure that steam contact all surface of the food product, it is noted that this would not be any different regardless of the particular length of the food product. That is, if the length of the food product is such that it would extend beyond the entrance and exit of the heat treatment section, then those portions that are currently being heat/steam treated would thus be required to be maintained within the confines of the steam chamber for a particular amount of time to achieve the desired degree of sterilization. This is similar to those lengths of food taught by the secondary references to Wallace, Stark and Peebles. To therefore employ a food product that extends beyond the entrance and exit of a steam chamber would have been an obvious function of the particular conventional food product that one chose to sterilize, as evidenced by the lengths of the food products taught by Wallace, Peebles and Stark.

- Further on page 24 of the Appeal Brief, Appellant urges that

> "[T]he recitation of claim 1 stating 'the food product having a length greater than the interior length of the steam sleeve such that the food product simultaneously extends beyond both the entrance and exit during at least part of the step of passing the food product through the steam sleeve' clearly indicates that the food product is continuous."

This argument has been considered but is not persuasive. It is noted that a food product need not be continuous in order to extend beyond the entrance

and exit of the steam sleeve. That is, discrete product having a length longer than the steam sleeve can be sterilized such that when undergoing sterilization portions of a discrete length of the food product extend beyond the entrance and exit of the steam chamber.

- On page 25 of the Appeal Brief, Appellant urges that

> "The remaining reference disclose the exterior surfaces of containers (as described above in regard to the Wallace, Peebles and Stark references) being contacted by steam. The heat applied to the container is then transferred through the container to the product contained therein. The individual products of these references do not have the structural integrity to be contacted directly on their surface by steam and therefore these references teach away from directly contacting the surface of the product with steam. Therefore, it would be improper to combine these references as the carcasses of Morris, Jr. are disclosed to be entirely within the steam chamber for treatment, not simultaneously extending both the entrance of and the exit during steam treatment."

These arguments have been considered but are not persuasive. As discussed above, it is noted that the use of the containers is mainly due to the fact that the food products do not have the structural integrity to be directly contacted by the steam. This would also have been the case with respect to Appellants food product if Appellant's food product did not have a particular structural integrity. That is, the direct contact of high pressure steam to sterilize the "non-rigid" food product would also have created a variety of problems, such as the high pressure damaging/tearing apart the food. If the product is very

flowable, then due to the velocity of the high pressure steam, the food might also have been blown away as a result of the high pressure and velocity or could have crept into the channels and crevices of the steam sleeve. Furthermore, since Morris Jr. already teaches a solid food that is directly contacted with steam and since the art teaches continuous food products that extend beyond the length of the steam chamber, to therefore sterilize a food product having a particular conventional length such that it would extend beyond the entrance and the exit of the container would have been an obvious matter of choice and/or design, and would also have been a function of the particular food product to be treated. That is, if one desired to sterilize a very long food product then obviously, depending on the particular length of the sterilizing chamber versus the length of the food, the food would extend beyond the length of the steam chamber.

- On page 26 of the Appeal Brief, Appellant urges that

"The Office Action asserts that the Moreland reference teaches an inwardly open channel through which a treatment fluid passes for the purpose of treating the surface of the article that comes into contact with the treatment fluid. As shown in figure 5 of Moreland, it is respectfully submitted that item 43 is neither inwardly open no does the treatment fluid contained therein contact the surface of an article to be treated. Rather, the volume of groove 43 disclosed by Moreland is delimited by the exterior surface of the stationary tube 19. Further, heated liquid can then be circulated in this space to heat the external surface of the tube 19. Therefore, the groove 43 is not inwardly open to a steam sleeve and the surface of the sausage emulsion contained within the interior surface of the tube 19 is not contacted by the heated liquid."

These arguments have been considered but are not persuasive. It is noted that Morris Jr. already teaches placing a food product having an outer surface on an advancement mechanism, providing a steam sleeve that generates a flow of steam; passing a food product through the steam sleeve using an advancement mechanism and generating a flow of steam and circulating the flow of steam within the sleeve, comprising an inlet for introduction of steam (item 36 of Morris) and an outlet for removal of steam and condensate (item 32 of Morris) with the flow of steam directly contacting the food product. The claim only differs in providing a specific type of structure for providing a particular type of flow pattern to the steam for sterilizing the food product. Moreland has been relied on to teach the particularly claimed inwardly open channels through which a heat treatment medium has been passed. That is, Moreland teaches open channels that circulate a heat treatment medium (column 3, lines 42-43) that provide the heat exchange to the food product. Moreland even teaches an inlet and outlet (Figure 3, item 44, 45) for the introduction and exit of the heat treatment medium. Therefore, the particular structure of inwardly open channels has been taught by Moreland. As claimed, the helical channels through which the heat treatment medium taught by Moreland flows, are inwardly open to an interior of the sleeve, especially since the helical channels are what provide one of the boundaries of the sleeve. (It is noted however, that independent claims 1 and 28 do not recite helical channels). Regarding the tube

employed by Moreland (19), it is noted that this tube is used for the purpose of maintaining the structure of the emulsion food product to be treated with heat. It would have been harder for a flowable product to be heated to retain a particular structure if the heat treatment medium directly contacted the food. Also, a flowable product would also have flowed into the helical channels required to Moreland for passing the heat exchange/heat treatment liquid. This would also have been the case with respect to Appellant's food product if Appellant's food product did not have a particular structural integrity. That is, without this structural rigidity the direct contact of high pressure steam to sterilize the "non-rigid" food product would also have created a variety of problems, such as the high pressure damaging/tearing apart the food as well as flowing into the steam channels. If the product is very flowable, then due to the velocity of the high pressure steam, the food might also have been blown away as a result of the high pressure and velocity. Therefore, if the food product was of a rigidity that it could maintain its shape (i.e. not flowable) then the use of a container type structure would not have been as necessary to the heat treatment of the food product.

Furthermore, as discussed above with respect to appellant's urgings on page 11 of the Appeal Brief, the reference to Wilson further evidences that it was desired that moisture does not remain on the food product, since it is taught that excess moisture would absorb the heat energy that performs the pasteurization (column 7, lines 46-50, for instance). As can be seen from figure 9a, Wilson et

al. further teach encircling of the steam around the food product for the purpose of uniform steam treatment. This provides motivation for the particular pathway of the steam around the food product. In any case, the art has thus recognized that residence of moisture on the food product results in the transfer of heat away from the food and thus lowering the pasteurization temperature while also uniformly treating every surface of the food product, as evidenced by Wilson on column 7, lines 46-50. Cronin also is also preventing minimal residence of the heat treatment medium on the food product (Column 4, lines 46-52). Although Gressly and Abrams are directed to liquid products, they still teach employing a helical passage for the heat treatment medium for the purpose of allowing for uniform heating of the food as well as rapid and uniform sterilization (see column 3, lines 22-52 and column 4, lines 24-29 of Gressly and column 4, lines 8-34 of Abrams). Since Moreland is applying a similar helical path using inwardly open channels to therefore modify the structure of the combination and employ the open channel structure as taught by Moreland would therefore have been obvious to one having ordinary skill in the art, for the purpose of ensuring that the treatment medium taught by the combination would come into complete contact with the food product that is passed there-through.

- On pages 26-27 of the Appeal Brief, Applicant urges that,

"The advisory Action, mailed February 3, 2009 asserts that 'The channels, however, are clearly open inwardly regardless of the positioning of the stationary

tube. The claim is not specific with respect to what is the channel inwardly open.' The Applicants respectfully indicate that claim 28 recites, 'the channel inwardly open to an interior of the sleeve while the food product is passing therethrough' and is therefore clear that the channel is open to the sleeve interior and in common with the same interior through which the food product is passing."

Regarding this argument, it is noted that the helical channels disclosed by Moreland are indeed inwardly open to an interior of the sleeve, with the only difference being that the flow of the heat treatment liquid taught by Moreland contacts the tube, 19, which then transfers the heat to the food product. Since the heat treatment liquid is exchanging heat to the tube and then to the food, it is noted that the helical channels taught by Moreland are open toward the interior of the sleeve. As discussed above, the tube 19 holds the particular shape of the food product while the heat treatment/heat exchange takes place. The difference between the structure of Moreland and that of appellant's invention appears to lie in the use of the tube by Moreland to maintain the shape of the food. Since the food is an emulsion, without the tube it would have been obvious that the food would have occupied the spaces of the helical channels. This would also have been the case if the food product employed in appellant's steam sleeve was an emulsion. Therefore, Moreland is similar to appellant's invention in that Moreland is providing heat treatment to a product by employing channels that are open to the interior of the sleeve through which a heat exchange/heat treatment medium passes for treating a food product contained within the sleeve.

- On page 27 of the Appeal Brief, Appellant urges that claim 2 is allowable for the reasons discussed with respect to claim 28. Further on page 27 of the Appeal Brief, Appellant urges that claims 3-7, 10, 12-16, 30-32, since they depend on either of claim 1 or claim 28 are patentable for the reasons given with respect to claims 1 and 28. These arguments are not persuasive for the reasons given above.

- On page 28 of the Appeal Brief, Appellant urges that

> "The Office Action admits that Wilson fails to disclose the particular structure of the channel as recited in claim 28 and then details the missing portions of the structure as including 'the channel inwardly open to an interior of the sleeve while the food product is passing there through.' It is respectfully submitted that, as discussed above, Moreland fails to provide this missing structure. As all of the recited structures are not disclosed in the cited references, it is respectfully submitted that claim 28 is not obvious."

These arguments have been considered but are not persuasive. It is noted that Wilson teaches steam sterilizing a food product by employing channels through which the steam enters and exits the steam chamber and wherein the flow of steam contacts the outer surface of the food product for treatment of the outer surface of the food product (Column 6, Line 42 to Column 7, Line 27). Wilson recognized the importance of preventing condensate from residing on the food product during sterilization since it takes heat energy away from the food and thus lowers the sterilization temperature (column 7, lines 46-50, for instance). Figure 9A of Wilson also teaches the concept of circulating the steam into (figure 9A, Item 136 and Item S entering the chamber) and out of the

chamber (Figure 9A, item S near item 158 exiting the chamber) and providing an exit for the condensate (Figure 9A, Item 119). From figure 9A, it can be seen that Wilson also is teaching applying steam to sterilize the food product, wherein the steam hits the surface of the food product along the length of the product, with the condensate exiting at item 119 and the steam exiting through item 138. The difference between Wilson and the claim is the particular channels that have been employed to direct the steam into direct contact with the food. Nevertheless, Moreland provides inwardly open channels, as discussed above, for the purpose of providing heat exchange between the heated liquid and elements *within* the heating sleeve. In view of Figure 9a of Wilson et al. which teaches encircling the food product with steam, to modify the structure of Wilson et al. and employ the open channel structure as taught by Moreland which would also have resulted in encircling of the product with a treatment fluid, would therefore have been obvious to one having ordinary skill in the art, for the purpose of ensuring that the treatment medium taught by Wilson et al. would come into complete contact with the food product passed there-through.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/V. T./

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